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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/044,558

01/11/2002

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10018003-1

9516

7590 04/02/2008
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EXAMINER

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ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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04/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/044,558
Filing Date: January 11, 2002
Appellant(s): FAN, JIAN

Ashok K. Mannava (Reg. No. 45,301)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/20/2008 appealing from the Office action mailed 09/25/2007.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,583,659	Lee et al.	12-1996
6,868,183	Kodaira et al.	3-2005
6,978,045	Hashimoto et al.	12-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6 and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. U.S. Patent No. 5,583,659.

Regarding claim 1, Lee teaches a method to identify text-like pixels (characters) from an image (column 5, lines 63-65), the method comprising:

Classifying a plurality of individual pixels within a mask within the image as either edge or non-edge (column 4, lines 23-25), wherein a pixel (i,j) is located at the center of mask (abstract and column 4, line 5);

Determining whether the pixel (i,j) is an edge pixel or a non-edge pixel (column 4, lines 23-25); and

Determining of whether the pixels having connectivity (the determination of window pixels around pixel (i,j) of having a connectivity that is by the determination of gradient strength of pixels to be associated with a specific window of pixels) (column 4, lines 5-21) (column 4, lines 5-21) with the pixel (i,j) (column 4, lines 5-21) are edge pixels or non-edge pixels (column 4, lines 22-25 and column 7, lines 59-61); and

Performing edge-bounded averaging (column 4, lines 29-31) to determine line segments (determine line art which includes graphs, maps, characters, line (skeletal), textual letters and numbers) (column 5, line 60 to column 6, line 2), wherein the edge-bounded averaging includes finding one of either:

An average value of only the edge pixels having connectivity with pixel (i,j), in response to determining that pixel (i,j) is an edge pixel (calculation of average edge pixels if determine that the pixel (i,j) lies in the vicinity of an edge) (column 8, lines 34-43).

For claim 2, Lee further teaches the method further comprising:

(c) examining sub-blobs of pixels (the analysis of gradient strength by pixel in pixel window) within the image (column 7, lines 35-45); and

(d) performing sub-blob connectivity analysis (perform analysis determine whether the pixel is in a vicinity of edge in a window of pixels of the image) (column 7, lines 55-67).

Referring to claim 3, Lee teaches the method further comprising:

(e) identifying and classifying edges of pixels within the image (column 4, lines 23-25);

(f) performing filling to further classify pixels within the image (the step of re-assigning, correcting and merging pixels into either black or white pixels using gray-scale analysis) (column 8, lines 1-33).

(g) performing consistency analysis of pixels within the image (a test to determine whether pixel lies in a vicinity of an edge of an image) (column 7, lines 59-62).

(h) performing pixel connectivity analysis of pixels within the image (perform analysis determine whether the pixel is in a vicinity of edge in a window of pixels of the image) (column 7, lines 55-67); and

(i) identifying text pixels within the image (column 5, line 64 to column 6, line 8).

For claim 6, Lee discloses the method further comprising smoothing the image (to classify pixels in image region of uniform tone and to remove boundary artifacts) (column 12, lines 50-52 and column 13, lines 10-12).

For claim 23-25, please refer back to claims 1-3 for the teaching and explanations.

Regarding claim 26, please refer back to claim 1 for further teachings and explanations.

In addition, Lee teaches a computer readable storage medium with computer programs comprising instructions to process digital image and aforementioned limitations in claim 1 (system with digital processor) (column 6, lines 15-44).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 5,583,659 and Kodaira et al. U.S. 6,868,183 as applied to claim 1 above.

Regarding claim 5, Lee does not explicitly teach the method comprising performing color space conversion of the image. Kodaira teaches a method of processing text-like pixels (column 4, lines 58-65) comprises a color space conversion mean (column 16, lines 1-20). Modifying Lee's method of processing text-like pixels according to Kodaira would be able to allow the color

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conversion capable from one color space to another. This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Lee according to Kodaira.

8. Claims 8, 10, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 5,583,659 and Hashimoto et al. U.S. 6,978,045 as applied to claims 1-3 above.

Regarding claim 8, as discussed in claims 1-3, Lee teaches a method of pixels classification and edge processing. However, Lee does not explicitly teaches the method of classifying edges of pixels wherein pixels can be classified as non edge, white edge or black edge. Hashimoto teaches a method of processing text-like of the image (character edge processing) (abstract) wherein pixels are classified as non edge (column 11, lines 42-47). Modifying Lee's method of processing text-like pixels according to Hashimoto would able to classify pixels of image to more specific regions whether black edge, white edge or no edge for further processing. This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Lee according to Hashimoto.

For claim 10, Hashimoto also teaches the method wherein classifying line segments of pixels starting from a first side of a line proceeding to a second side of the line identifying consecutive segments of pixels as non edge, white edge or black edge (column 4, lines 64-67 to column 5, lines 1-11).

As to claim 15, Lee discloses the method wherein step (h) performing pixel connectivity analysis of pixels within the image (perform analysis determine whether the pixel is in a vicinity of edge in a window of pixels of the image) (column 7, lines 55-67) comprises:

Identifying aggregates of pixel having been identified as candidates for text, the aggregates being sub-blobs (sum of all the gradient intensity values in a window) (column 10, lines 20-25); and

Collecting statistics with respect to each sub-blob, wherein said statistics are selected from the group consisting of total number of pixels (absolute sum) (column 7, lines 15-40).

Regarding claim 16, Hashimoto further teaches the method wherein step (c) examining sub-blobs of pixels within the image comprises: examining each sub-blob to determine whether it is non text (the process of differentiate in gradation of target pixel and each of the eight adjacent pixels to determine non-edge which also is non text since Hashimoto teaches text's edge processing) (column 4, lines 64-67 to column 5, lines 1-11).

Regarding claim 17, please refer back to claims 10 and 16 for further teachings and explanations.

Allowable Subject Matter

9. Claims 7, 9, 11-14, 20, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(10) Response to Argument

(A) The following discussion relates to the rejection of claims 1-3, 6, and 23-26 under 35 U.S.C 102(b) as being anticipated by Lee et al. U.S. Patent No. 5,583,659.

1. Appellant's Argument ---- The Appellant argues (page 10 of the Appeal Brief) that Lee fails to teach "edge-bounded averaging" concept since the claims 1, 23 and 26 recited that "edge-bounded averaging includes finding an average value of only edge pixels having connectivity with pixel (i,j), in response to determining that pixel (i,j) is response to determining that pixel (i,j) is a non-edge pixel." The Appellant further discloses that Lee only discloses the average of every pixel within as mask/window, whereas the claims recite averaging "only" a particular subset of pixels, i.e. edge or non-edge having connectivity.

Examiner's Response ---- The Examiner respectfully disagrees with the Appellant's argument. The Examiner firmly believes that Lee teaches a concept of edge-bounded averaging for pixels considered as edge pixels as claimed (calculation of average edge pixels after determined that pixels (i,j) lies in the vicinity of an edge) (column 8, lines 34-43). In addition, the Examiner firmly believes that not only the Appellant fails to understand the logic behind this position and fails to understand the Examiner's interpretation but also the Appellant fails to understand the cited paragraph, column 8, lines 34-43 wherein it clearly illustrates the teaching:

"Alternatively, if area gradient, $GS(i,j)$ exceeds the threshold value, GT , then pixel(i,j) lies in the vicinity of an edge. In this case, step 245 is now performed to ascertain the values of $L_{sub.max}$ and $L_{sub.min}$, if these values have not already been determined, as set forth above. Thereafter, method 200 advances to block 248 which calculates an average pixel intensity

value, L.sub.avg, occurring within the N-by-N pixel window centered about pixel position (i,j). This average intensity value is simply determined by averaging the values L.sub.max and L.sub.min.” (Emphasis added)

Thus, Lee clearly teaches a calculation of averaging for pixels “only” a particular subset of pixels, i.e. edge or non-edge having connectivity (which is the association of pixels are lie in a vicinity of an edge) (column 4, lines 25-28).

2. Appellant’s Argument ---- The Appellant argues (bottom of page 11 and page 12 of the Appeal Brief) that Lee fails to teach “determining whether the pixels having connectivity with pixel (i,j) are edge pixels or non-edge pixels”. The Appellant further elaborate the arguments by indicating that Lee does not teach or suggest determining any relationships, such as connectivity, between pixels within individual windows. Therefore, Lee fails to teach determining if pixels having connectivity to pixel (i,j) are edge pixels or non-edge pixels.

Examiner’s Response ---- The Examiner respectfully disagrees with the Appellant’s argument. First, Lee clearly teaches a determining of whether the pixels having connectivity are edge pixels or non-edge pixels (to determine of whether pixels are **associated** with an area gradient such as edge or non-edge) (column 4, lines 22-33). Therefore, Lee clearly teaches a performing of an averaging of pixels that are edge or non-edge having connectivity (column 8, lines 34-43).

3. Appellant’s Argument ---- The Appellant argues (bottom of page 12 of the Appeal Brief) that Lee fails to teach performing edge-bounded averaging to determine “line segments” as recited in claims 1, 23, and 26.

Examiner’s Response ---- The Examiner respectfully disagrees with the Appellant's argument. As fully explained, Lee teaches a performing edge-bounded averaging

(see discussion of **(10) Response to Argument**, Examiner's Response of 1 and 2). In addition, Lee teaches a performing of edge-bounded averaging to determine "line segments" at column 5, line 60 to column 6, line 2 wherein Lee discloses a determination of line art which includes graphs, maps, characters, line (skeletal), textual letters and numbers.

(B) The following discussion relates to the rejection of claim 5 under U.S.C 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 5,583,659 in view of Kodaira et al. U.S. Patent No. 6,868,183.

1. Appellant's Argument ---- The Appellant argues (page 13 of the Appeal Brief) the combination of Lee and Kodaira fail to teach the elements discussed in the independent claim 1, from which claim 5 depends and therefore claim 5 is allowable by at least by virtue of its dependence on claim 1.

Examiner's Response ---- As explained above, see discussion of **(10) Response to Argument**, Examiner's Response of 1-3, Lee has suggest all the elements disclosed in independent claim 1 and thus the combination of Lee and Kodaira has established a prima facie case of obviousness.

(C) The following discussion relates to the rejection of claims 8, 10, and 15-17 under U.S.C 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 5,583,659 in view of Hashimoto et al. U.S. Patent No. 6,978,045.

1. Appellant's Argument ---- The Appellant argues (page 14 of the Appeal Brief) the combination of Lee and Hashimoto fail to teach the elements discussed in the independent claim 1, from which claims 8, 10 and 15-17 depend and therefore claims 8, 10 and 15-17 are allowable by at least by virtue of its dependence on claim 1.

Examiner's Response ---- As explained above, see discussion of **(10) Response to Argument**, Examiner's Response of 1-3, Lee has suggest all the elements disclosed in independent claim 1 and thus the combination of Lee and Hashimoto has established a prima facie case of obviousness.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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